Performance of Sharī'ah Compliant Equity Investments in Comparison with their Conventional Counterparts: Evidence from Pakistan

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Abstract

This paper investigates the effects of Sharī'ah screening criteria on the performance of an investment portfolio by employing various absolute and risk-adjusted performance measures and Johansen's co-integration test on hypothetical investment portfolios, containing equities included in KMI-30, KSE-100, and KSE-All indices, respectively. Empirical results suggest that Sharī'ah screening criteria do not affect the absolute and the risk-adjusted performance of an Islāmic investment portfolio, compared to its conventional counterparts; furthermore, index prices of the Sharī'ah compliant equities' index (KMI-30) are not co-integrated with that of conventional equities' index (KSE-100), which implies that both of the indices' prices have been changing independently. Therefore, it is recommended that investment portfolios can better be diversified for their enhanced risk to return performance by adding Sharī'ah compliant equities into them.

Keywords: Islāmic Finance, Islāmic Capital Markets, Asset Management, Sharī'ah Compliant Equity Investments, Risk-Return Performance, Co-integration.

1. Introduction

Islām has not only clarified faith and other religious rituals, but also advised rules for its followers' social and economic interactions, including financial ones (Marzban & Asutay, 2012). An exploratory study of Islāmic jurisprudence (*fiqh al-muʿāmalāt*) reveals that all transactions are valid on the principle of 'General Permissibility', except those, which are explicitly prohibited that include interest based and speculative in nature financial transactions (Wilson, 2004).

Even though, many Islāmic Financial Institutions (IFIs) had come into being till 1990s; yet Muslims at large were not involved in equity

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investments because of some serious doubts in the minds of Muslim intelligentsia about Islāmic position of equity investments amidst of conventional financial market practices. However, in 1992, Jeddah based Islamic Fiqh Academy issued a decree ruling that within certain conditions equity investing is permissible. The said decree proved as a stimulus and afterwards Islāmic investment funds grew remarkably. (Binmahfouz & Hassan, 2012; A.-Rehman, Yahya, & Nasir, 2010; Girard & Hassan, 2008; Hussein, 2004; Hakim & Rashidian, 2004; Wilson, 2004; Usmani, 2002). Total Assets under Management (AuM) of the Global Islāmic Funds Industry had reached to US$58 Billion in 2010 (Ernst & Young, 2011). According to some authentic estimates published recently in the Global Islāmic Finance Report-2013, AuM of IFIs are US$1.632 Trillion globally, out of which Pakistan based IFIs were holding US$13 Billion (Edbiz Consulting, 2013).

In global context, Sharī'ah compliant/Islāmic investment is not a new concept, but rather an extension of the earlier concepts of Socially Responsible Investments (SRI), ethical, and faith-based Investments. There are various funds operating worldwide in the developed and the emerging economies alike on the principles of SRI, ethical and faith-based Investing. SRI can be defined as an investment strategy, where financial performance and social good both are pursued simultaneously (Managi, Okimoto, & Matsuda, 2012). Similarly, in ethical investing, investors are not only apprehensive of the risk-return performance of companies but also want to know about companies' nature of businesses; that means, ethical investors avoid investing in those companies' stocks that are involved in any unethical activities (Sandberg, 2013; Lewis, 2002); likewise, faith-based investing encompasses selection of only those equities that are consistent with the investors' faith/religious beliefs (Dania & Malhotra, 2013). However, in case of Islāmic investing, an investor has to: i) pursue for financial performance and social good; ii) avoid investing in companies' stocks that are involved in any unethical activities; and iii) select only those equities that are consistent with his religious beliefs. That is, Islāmic investments encompass objectives of socially responsible, ethical, and faith-based investments all together (Ghoul & Karam, 2007).

Islāmic investment funds, like all other morally and socially screened funds, exclude those companies from their investment universe whose core business activities are believed to be unethical; for example, companies producing and/or distributing intoxicants, firearms, pork, tobacco products, etc.; brothels, casinos, airlines and hotels that serve intoxicants (Dania & Malhotra, 2013; Sandberg, 2013; Managi et al.,

2012; Ghoul & Karam, 2007). Besides these exclusions, Islāmic funds exclude all the conventional financial institutions and insurance companies from their investment universe, because their core business activities are *ribā* and/or *gharar* based. In addition, all those companies are excluded whose interest based debts and financial assets' returns exceed the pre-determined tolerance levels (A.-Rehman et al., 2010; Derigs & Marzban, 2008; Wilson, 2004; Usmani, 2002).

These exclusion criteria of Islāmic funds contradict the Modern Portfolio Theory (MPT), which assumes that the investment selection decisions are generally made by considering only the expected returns and the associated risks of financial assets that are measured on the basis of 'mean' and 'variance' of various assets' returns (Markowitz, 1952). MPT is actually not in favor of any kind of investment restrictions based on some moral and/or social norms; because, such restrictions would possibly be limiting the diversification and hence the efficiency of investment portfolios; which might lower returns while increasing the risk (Bauer, Koedijk, & Otten, 2005; Luther, Matatko, & Corner, 1992). In addition, the screening process of the Islāmic funds may incur extra costs, such as monitoring and management costs, which might affect the performance of funds undesirably (Binmahfouz & Hassan, 2012).

While, the proponents of morally and/or socially screened funds argue that the screening criteria positively affect the investment portfolios because equities of only those companies are selected that are financially invulnerable, more stable and more profitable. In addition, highly leveraged companies are screened out from the investment universe that leads to more solid investment prospects by limiting the overall risk (Abdullah et al., 2007; Ghoul & Karam, 2007; Hussein & Omran, 2005). It is good to note, therefore, that highly leveraged companies, like Enron, WorldCom, and Tyco, were removed by Dow Jones Islamic Market Index (DJIMI) from its composition prior to their bankruptcies (Hussein & Omran, 2005).

Since the emergence of Islāmic investment funds various empirical studies have been conducted on the comparative performance of such funds. The scholars' basic motivation behind such scientific endeavour was to observe any dissimilarity in the performance of Islāmic funds due to their adherence to the strict Sharī'ah constraints on equities selection, which limits the investable universe for Islāmic funds and hence reduces the diversification benefits as compared to the conventional funds. Results of all such studies are mixed; some studies concluded the similarities in the performance of the two kinds of fund, while some others concluded

that the performance of conventional funds was superior to that of Islāmic funds. These mixed results necessitate the need of the analysis of comparative performance of Islāmic and conventional funds by using different time series data for realizing a common understanding worldwide.

This paper examines the effect of Sharī'ah screening criteria on the performance of an investment portfolio, in the context of Pakistan's equity market, by employing various absolute and risk-adjusted performance measures, and Johansen's co-integration test. Three hypothetical investment portfolios, containing equities of KMI-30, KSE-100, and KSE-All indices respectively, have been constructed for this scientific endeavor. Where, KMI-30 is the Islāmic equity index; KSE-100 is the conventional one; while, KSE-All is the equity index used as a benchmark.

The rest of the paper is organized as follows: Section 2 provides a brief review on the Sharī'ah compliant equity investments, while Section 3 explains the empirical models and different statistical and econometric tests employed in this study. Afterwards, empirical results are discussed in the Section 4, while Section 5 concludes the paper.

2. Sharī'ah Compliant Equity Investments

An investment is basically an act of committing resources (money, etc.) in the expectation of some future advantage (Bodie, Kane, & Marcus, 2004). The gain of all such investments in the conventional capital/money markets is generally the interest earned on investments, which is strictly prohibited in Islām (Mansoori, 2009). Equity investments are the investments made in the stocks/shares of a company, either through the Initial Public Offerings (IPOs) of companies or through stock markets. The gain of such investments is of two types: i) dividends paid by companies periodically; and ii) the capital gain in the form of difference in the sale and the purchase prices of stocks. The gain thus one gets through the equity investments is permissible in principle (Usmani, 2002), but there are some prohibitions too in choosing the company for equity investments, and in the stock's trading in secondary markets (AAOIFI, 2010; Hussein & Omran, 2005; Wilson, 2004; Usmani, 2002; Naughton & Naughton, 2000), which are discussed briefly in the following paragraphs.

Equity investing is permissible but Muslims are barred from acquiring equities of those companies whose core business activities are impermissible from the Sharī'ah point of view; for example: i) conventional financial institutions, since their operations are *ribā* (interest) based; ii) Casinos, since their operations are *qimār* (Gambling) and *maisir*

(Games of chance) based; iii) conventional insurance companies, since their operations contain an element of *gharar*; and iv) all those companies whose core business activities are prohibited by Sharī'ah; like companies that manufacture/sell products that are *harām* (impermissible) e.g., liquor, pork, meat of animals that are not slaughtered in an Islāmic way; and companies that offer services that are *harām*, e.g., prostitution, pornography, etc. Furthermore, Sharī'ah prohibits acquisition of equities of those companies that are involved in certain impermissible financial activities that include: i) financing through interest bearing debt; and ii) investment of company's idle money into some interest bearing financial instruments (Al-Dbiān, 2011; AAOIFI, 2010; Derigs & Marzban, 2008, 2009).

There are two different opinions of the contemporary Sharī'ah scholars regarding the permissibility of equity investment in those companies, whose core business is *halal*, but are involved in certain *harām* activities; like interest based borrowings from the conventional financial institutions and/or holding some interest bearing securities (Al-Dbian, 2011; Al-Hamish, 2007; Usmani, 2002). Such companies are referred as *al-sharikāt al-mukhtalitah* (mixed companies) in the literature of contemporary Islāmic Jurisprudence.

Moreover, Sharī'ah scholars have critically reviewed the prevalent stock trading practices and resolved the following stock trading practices as intolerable from the Sharī'ah point of view (AAOIFI, 2010; Naughton & Naughton, 2000; Elgari, 1995): i) margin trading, where a person buys stocks by paying part of the price in cash while the remaining amount has been borrowed from the broker on interest; ii) short selling, where a person buys such shares (whose price is expected to decline) from a broker on credit and sell it on cash. When the price of shares actually declines, they purchase the same and redeem to the broker to close the short position; and iii) all other speculation based stock trading practices (like conventional equity futures and options).

Sharī'ah scholars, like Abdul Aziz Bin Baz, Salih Al-Fauzan, Yusuf Al-Qarzavi, *etc.,* consider equity investments in mixed companies prohibited because of these companies' involvement in certain Islāmically unlawful activities. These scholars believe that Muslims are duty bound to comply with all the divine injunctions in accordance with the Holy Prophet's sayings: "…So, if I forbid you to do something, then keep away from it. And if I order you to do something, then do of it as much as you

can."[2] (Al-Hamish, 2007). Whereas, Sharī'ah scholars, like Ibn-e-Usaymin, Abdullah Al-Mani'a, Mustafa Al-Zarqa, Mohammed Taqi Usmani, etc., have resolved on the basis of *'umūm balwa*[3] (common plight), *rafa' al-harj*[4] (elimination of hardship), and *al-hājah al-'āmah*[5] (public need), *'urf khās min 'asālīb-e-Iqtisādiyah*[6], and *fasād al-zamān*[7], that equity investment in mixed companies is permissible, as long as the major part of the business activities is *halal* and the unlawful profits through the Islāmically unlawful activities are separated from the company's revenues through the *halal* activities (AAOIFI, 2010; Al-Hamīsh, 2007; SC, Malaysia, 2007; Usmani, 2002).

2.1 Sharī'ah Viewpoints on Tolerance Thresholds

Modern Islāmic Financial System (IFS), as envisioned by the eminent Islāmic economists and jurists of the 20th century, is based on the sound principles that promote financing of the real economy on risk sharing basis. Such a risk-reward sharing nature of IFS suggests a dominant role of equity-based financing in the IFS (Ahmed, 2012; Iqbal & Mirakhor, 2011). According to Usmani (2002), individual as well as institutional investors are allowed to invest in equities of only those companies that fulfil the following two conditions: i) companies' core business is *halal*, and ii) companies are not involved in interest bearing borrowings and investments. But unfortunately, "such companies are very rare in the contemporary stock markets" due to the predominant interest based financial system around the globe, even in the Muslim countries (Wilson, 2004). Hence, the Sharī'ah scholars have removed hardships for Muslim investors by relaxing Sharī'ah constraints on companies' interest based financial activities through their *ijtihād* and suggested "the threshold levels for specific financial ratios" (Binmahfouz & Hassan, 2012; Pok, 2012; A. Rahman et al., 2010; Derigs & Marzban, 2009). Only those

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[2]Sahih al-Bukhari, Vol. 9, Book 92, *hadith* 391.

[3]*'Umūm balwa* is an unfavorable widespread situation affecting most people and is difficult to avoid." Following are the maxims of Islamic jurisprudence that excuse Muslims caught in *'umūm balwa* situations: i) "Adversity allows for measures to bring about ease." ii) "If a situation faces a problem, Sharī'ah allows for a way out." iii) "Something forbidden which occurs widely (and which is difficult to avoid), Sharī'ah brings relief to those affected." (SC, Malaysia, 2007).

[4]"…Allah does not desire to place any hardship on you" (Qur'an, 5: 6).

[5]Following are the maxims that ease Muslims on the basis of *al-ḥājah al-'āmah*:
i) "Need, whether of a public or private nature, is treated as necessity;" and ii) "Necessity renders prohibited things permissible."

[6]It is interpreted as "something that is widely used, especially in economic activities" (SC, Malaysia, 2007).

[7]Meaning: "lack of good deeds and practices at a particular time" (SC, Malaysia, 2007).

companies are included in the investable universe of Sharī'ah compliant equities whose interest based financial activities are within the threshold levels (Hussein & Omran, 2005).

Table 2.1: Tolerance Thresholds for Specific Financial Ratios

Islāmic Indices	Level of Debt	Cash & Interest Bearing Securities	Liquidity	Impermissible Income
Dow Jones	Total Debt/ Market Cap (Aver. 24 Month) Less than 33%	Cash & Interest Bearing Securities/ Market Cap (Aver. 24 Month) Less than 33%	Account Receivable/ Market Cap (Aver. 24 Month) Less than 33%	Less than or Equal to 5% of Total Revenue
FTSE	Total Debt/ Total Assets Less that 33%	Cash & Interest Bearing Securities/ Total Assets Less than 33%	Account Receivable & Cash/Total Debt Less than 50%	Less than or Equal to 5% of Total Revenue
S & P	Total Debt/Market Cap (Aver. 36 Month) Less than 33%	Cash & Interest Bearing Securities/ Market Cap (Aver. 36 Month) Less than 33%	Account Receivable/ Market Cap (Aver. 24 Month) Less than 49%	Less than or Equal to 5% of Total Revenue
Malaysian SEC	Interest Based Debt/Total Assets Less that 33%	Interest Bearing Investments/ Total Assets Less than 33%	N/A[8]	5% & 20% of Total Revenue
KMI	Interest Based Debt/Total Assets Less than 37%	Interest Bearing Investments/ Total Assets Less than 33%	Illiquid Assets/ Total Assets Greater than 25%	Less than or Equal to 5% of Total Revenue

Source: Adopted from Binmahfouz (2012), KMI (2014) & Securities Commission Malaysia's website (2014).

2.1.1 Sharī'ah Viewpoints on Tolerance Thresholds for Interest based Debt

Interest based borrowings from conventional financial institutions (CFIs) are impermissible from the Sharī'ah point of view. But the borrowed money is recognized by Islāmic jurists as lawfully owned by the borrower; therefore, things procured in exchange of that money are not *harām*[9]; and hence, "this sinful borrowing does not render the whole business of the

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[8] Not Applicable.

[9] "The contract of loan is one of gratuitous contracts (*'uqud tabaru'āt*), therefore, condition of interest cannot be stipulated. However, if such a condition has been stipulated, the condition itself is void, but it will not invalidate the contract. Since, the contract remains valid despite of void condition, the borrowed amount would be permissible to use" (Usmani, 2002).

company *harām"* (A.Rahman et al., 2010; Usmani, 2002). Moreover, "Everything will be tainted by what is prohibited, but if the larger part is *halal*, then trade is allowed." (Al-Kasani, as cited in SC, Malaysia, 2007). Al-Kasani's argument can further be supported by the following juristic principle: "The majority deserves to be treated as the whole of a thing" (Usmani, 2002).

Threshold level of interest bearing debt is not explicitly mentioned in the divine sources of Islāmic law, but rather deduced by Sharī'ah scholars through their *ijtihād* (Derigs & Marzban, 2008). As mentioned in the Table 2.1, the most frequently applied tolerance threshold of interest bearing debt is 33% of the company's total assets or total market capitalization. Sharī'ah foundations of such tolerance level are considered to be laid down on the following reasoning: i) The holy Prophet (pbuh) advised Abu Bakar at one occasion and Saad Bin Abi-Waqas at another that not to donate more than one-third of their wealth, and commented that "One third is too much"; and ii) "Whether a commodity that is part gold and part brass qualifies as gold for purposes of applying the rules of *ribā* is resolved by the percentage of gold in the commodity, i.e. if greater than a third, it is gold" (Lahsansa & Hassan, 2011; A. Rahman et al., 2010; Obaidullah , 2005, 2009; Derigs & Marzban, 2008; SC, Malaysia, 2007; Usmani, 2002).

2.1.2 Sharī'ah Viewpoints on Tolerance Threshold for Interest Bearing Securities/ Deposits

A large number of contemporary Sharī'ah scholars consider a joint stock company different from a partnership. They argue that all partners in a partnership are considered as agents of each other; therefore, all of them are equally responsible for all the activities of a partnership because policy decisions are taken unanimously. In case of a joint stock company, however, all decisions are made by the Board of Directors on behalf of majority. Therefore, it is unwise to make every shareholder responsible of any wrongdoings of the company. Moreover, if a company's main business is *ḥalāl*, however, it holds some interest bearing securities and/or have some interest based deposits in CFIs and the interest thus earned is less than 5% of the total revenues of the company and is purified, it does not make all the company's business unlawful (Al-Hamīsh, 2007; Obaidullah, 2005, 2009; Usmani, 2002).

Some Sharī'ah scholars have resolved that investment in the mixed companies' shares is impermissible. Their viewpoint is based on the following juristic principle that states: "If *ḥalāl* is mixed with *ḥarām*, then it should be ruled as *ḥarām"*. But, some scholars have rebutted this

view point in the case of mixed companies' shares and/or income with the help of following argument (given by SC, Malaysia, 2007): the authenticity of the above maxim is disputed because of the 'unknown origin' and the 'broken reporting sequence' of the Ḥadīth on which the said maxim is based.

2.1.3 Sharī'ah Viewpoints on Tolerance Threshold for Liquid Assets

Shares of a company can be traded at prices other than their par values if the majority of assets owned by the company are illiquid. If the liquid assets (cash & account receivables) of a company are in majority, then its shares can be traded at par value only; because in such case each share is considered to be representing the money, which can't be traded except at par value (Ayub, 2007). Sharī'ah scholars have defined the tolerance threshold for liquid assets of a company to be insignificant, so that its shares can be included in the investable universe of Sharī'ah compliant equities. Liquidity thresholds are based on the juristic principle that states: "The majority deserves to be treated as the whole of a thing". Practically, such thresholds range from 33% to 75% because of the difference of opinion among Sharī'ah scholars regarding the proportion of liquid assets of a company that should be considered as insignificant, or illiquid assets that could be considered as significant (as per *Ahnāf*). Sharī'ah foundations of various liquidity thresholds are stated as follows (A.-Rahman et al., 2010; Derigs & Marzban, 2008; Usmani, 2002):

a) Liquidity threshold of 33% is based on the Prophet's (pbuh) advice to Abu Bakar and Saad Bin Abi-Waqas not to donate more than one-third of their wealth, and his comment that "One third is too much"; and the aforementioned juristic rule about the mixture of gold and silver: gold of less than 33% is insignificant. Hence, liquid assets of a company that are less than 33% of the company's total assets or total market capitalization are insignificant and the majority of the company's assets will be treated as illiquid in accordance with the juristic principle: "The majority deserves to be treated as the whole of a thing".

b) Liquidity threshold of 50% is based on the opinion of some Sharī'ah scholars who believe that the ratio of company's liquid assets to the total assets must be less than 50%. According to them, liquid assets greater than 50% will be considered in abundance, therefore, all of the company's assets will be treated as liquid in accordance with the juristic principle: "The majority deserves to be treated as the whole of a thing".

c) Liquidity threshold of 75% is based on the opinion of Sharī'ah scholars belonging to the Ḥanafī school of thought, who believe that an asset that is a combination of liquid and illiquid assets can be traded at values other than its par value, provided the following two conditions are fulfilled:

    i) Illiquid assets are not insignificant (i.e., greater than or equal to 25% of total assets);

    ii) Asset's price should be greater than the price of liquid assets it contains.[10]

2.1.4 Sharī'ah Viewpoints on Tolerance Threshold of Impermissible Income

The money earned through some Ḥarām means like interest based transactions, trading in impermissible goods, bribery, robbery, etc. is Ḥarām too. But, when this Ḥarām money is mixed with the money that is earned through some Ḥalāl means, then this mixed money is not Ḥarām as a whole on the basis of juristic principle: "if there is a mix of the permissible and the prohibited, then it is ruled as prohibited". However, as money is not Ḥarām li-dhātihī (prohibited because of its nature), the aforesaid juristic rule is believed to be applicable to only those things, which are Ḥarām li-dhātihī, like, pork, and liquor, etc. The money earned through some Ḥarām means is Ḥarām li-dhātihī (due to other reasons). Furthermore, Ḥarām money can be separated from the mixed money. (Lahsansa & Hassan, 2011; Derigs & Marzban, 2008; Al-Hamish, 2007; SC Malaysia, 2007; Obaidullah, 2005, 2009; Usmani, 2002).

2.2 Review of Empirical Studies on Sharī'ah Compliant Equity Investments

Scholars have conducted various empirical studies with the aim of investigating the comparative risk-return performance of the Islāmic and conventional investment portfolios. For this purpose, they have employed risk-adjusted return measures like Sharpe ratio, Treynor ratio, Jensen's Alpha, etc. They also employed various econometric tests in order to explore any kind of relationships between the two investment portfolios. In the following paragraphs, some of the previous studies conducted on the subject are briefly reviewed.

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[10]Reasoning of this condition is based on a Juristic ruling, according to which: "a commodity that is part gold and part brass (or any other cheap metal) can't be sold on a price that is less than the price of gold it contains. If the commodity is sold on a price less than the price of gold it contains, this difference in prices would be *ribā*."

Atta (2000) has observed the effect of Islāmic norms on the performance of Islāmic investments portfolios. He found that an Islāmic investment portfolio comprising equities from Dow Jones Islamic Index outperformed its conventional counterpart. He concluded that Sharī'ah screening criteria based on Islāmic norms had no negative effect on the Islāmic investment portfolio's performance. Similarly, Hassan (2002) measured the efficiency and the risk-return relationship of DJIMI and found a substantially positive relationship between the conditional volatility and returns of DJIMI.

In another study, the risk-return performance of DJIMI and Wilshire 5000 stock market index were compared with the three (3) month's T-bills returns (Hakim & Rashidian, 2004). Researchers concluded that the returns of T-bills dominated both the Wilshire 5000 stock market index and the DJIMI, yet, risk-return performance of DJIMI was inferior to that of the Wilshire 5000. Moreover, they tested the short run and long run relationship amongst the variables using various econometric tests and found that there was no co-integration between the returns of T-bills, DJIMI and Wilshire 5000. Likewise, Hussein (2004) compared the performance of an investment portfolio comprising equities from FTSE Global Islamic Index with that of another portfolio, which included equities from FTSE All-World Index. He found that the performance of both the portfolios was equally good over the entire study period; however, the conventional portfolio underperformed the Islāmic one in the bullish market period and outperformed it in the bearish market period.

In another empirical study, Hussein and Omran (2005) investigated the impact of ethical screening on Dow Jones Islamic Indices. They found superior risk-return performance of Islāmic indices as compared to their conventional counterparts during the entire study period and the bull market period, but Islāmic indices remained underperforming than their counterparts during the bear market period. Likewise, Girard and Hassan (2005) tested the co-integration and compared the risk-return performance of seven Dow Jones Islamic indices with their conventional counterparts. They concluded that both the Islāmic and conventional indices performed equally well in the entire period; but conventional indices underperformed than Islāmic ones in the bearish market period while outperformed in the bullish market period. Furthermore, they found that Islāmic indices are poorly integrated with the conventional indices.

Some other scholars (Abdullah, et.al, 2007) matched the performance of Malaysia based Islāmic and conventional mutual funds. They found that conventional funds underperformed than the Islāmic funds during bearish

market period; while, Islāmic funds underperformed than the conventional funds during bullish market trends; furthermore, conventional funds have been showing a marginally better diversification level than their Islāmic counterparts.

Hussein (2007) compared the risk-return performances of the DJIMI and FTSE's Global Islāmic Index with their conventional counterparts. He found that Islāmic Indices have the risk-return performance equally good as that of the conventional indices in the short-run but have a superior performance in the long-run. Similarly, Albaity and Ahmad (2008) concluded in their study that risk-return performance of both the Islāmic and conventional indices is almost similar. Furthermore, they tested Islāmic and conventional indices econometrically and found them associated with one another. Likewise, Girard and Hassan (2008) studied the comparative performance and co-integration of the FTSE's Islāmic Indices with their non-Islāmic indices. In this study, they found similarity between the performances of the two kinds of indices. Furthermore, they concluded that both the indices are co-integrated.

Abdul-Rahim et al. (2009) studied the transmission of information (at return and volatility level) as well as the correlation between Kuala Lumpur Sharī'ah and Jakarta Islamic indices. They found the significant unidirectional return and volatility transmissions from Kuala Lumpur Sharī'ah and the Jakarta Islāmic indices. They further narrated the low correlation between the two Islāmic stock markets. In another scientific endeavor, Yusof, et al. (2010) measured the correlations between ethical and Sharī'ah compliant investments in different economic situations by employing various econometric tests. They concluded that returns of ethical and Islāmic funds in US, UK, and Japan do not have any short- or long-run relationships, which reveals the diversification benefits associated with Sharī'ah compliant investments for both the active and passive investors.

Hassan, Khan and Ngow (2010) studied the performance of Malaysia based Islāmic unit trust funds in comparison with their conventional counterparts. They have found similarity in the performance of the two types of funds. Furthermore, they have found that conventional funds are value-focused while Islāmic funds are small-cap oriented. In another scientific endeavor, Hoepner, Rammal and Rezec (2011) studied Islāmic equity funds from 20 countries. They established that performance of Islāmic funds from countries with developed Islāmic capital markets is better than the international conventional benchmarks. For the rest of the countries, having less developed Islāmic capital markets, Islāmic funds

have underperformed than conventional benchmarks. Similarly, Mansor and Bhatti (2011) have established that both the Islāmic and conventional portfolios have performed better than their market benchmark. But, the Islāmic portfolio has provided slightly less returns relative to its conventional counterpart. Likewise, Hayat and Kraeussl (2011) have reported that Islāmic equity funds have underperformed than their Islāmic and conventional equity benchmarks.

Binmahfouz and Hassan (2012) have reported that i) Sharīʻah screening process has no negative effect on the risk-return performance of Islāmic equity mutual funds; ii) Islāmic equity mutual funds are less likely to be exposed to market risk than the conventional funds and the market benchmark; and iii) Sharīʻah screening process does not seem to influence Islāmic equity mutual funds towards small or growth companies. In another similar study, Walkshäusl and Lobe (2012) analyzed the performance of Islāmic indices comparing them with conventional benchmarks. They reported the similarity in the performance of both types of indices. Moreover, they found a significant four-factor alpha for the U.S. Islāmic index, which is because of the recent financial crisis and the related decline in the number of financial stocks that are excluded from Sharīʻah-compliant indices. In addition, they narrated that the developed markets' Islāmic indices allocate capital primarily to growth stocks and firms with positive momentum, while the emerging markets' Islāmic indices particularly invest in large-capitalization stocks.

Rubio, Hassan, and Merdad (2012) measured the non-parametric performance of Islāmic mutual funds comparing them with international and American mutual funds. They reported that though Islāmic funds are limited to a smaller asset universe, they are highly efficient outperforming their international and American counterparts. Likewise, Alam (2013) compared the performance of Islāmic Exchange Traded Funds (ETFs) with that of their conventional counterparts and found that Islāmic ETFs outperformed both the conventional ETFs and the market benchmark index. Furthermore, he reported the less variability in returns of a portfolio of Islāmic ETFs than that of conventional ETFs.

In summary, empirical results of the studies so far are mixed. Some revealed that risk-return performance of an Islāmic investment portfolio is superior; while some other studies revealed that risk-return performance of a conventional investment portfolio is better than that of an Islāmic one. At the same time, there are certain studies which reveal that risk-return performance of an Islāmic investment portfolio is equally good as that of its conventional counterpart. Moreover, some studies concluded that there

is no dynamic relationship between the Islāmic and conventional indices' prices, while some other studies concluded otherwise.

On the basis of this literature review, following null and alternate hypotheses are set for achieving current study's aims and objectives:

H$_{01}$:   Risk-return performance of the Sharī'ah compliant investment portfolio is same as that of its conventional counterpart.

H$_{02}$:   Price levels of KMI-30 and KSE-100 are not co-integrated.

H$_{A1}$:   Risk-return performance of the Sharī'ah compliant investment portfolio is superior to its conventional counterpart.

H$_{A2}$:   Risk-return performance of the Sharī'ah compliant investment portfolio is inferior to its conventional counterpart

H$_{A3}$:   Price levels of KMI-30 and KSE-100 are co-integrated.

3. Research Methodology

3.1 Data

Hypothetical investment portfolios, containing equities of KMI-30, KSE-100, and KSE-All indices respectively, have been constructed. Where, KMI-30 is the Islāmic equity index; KSE-100 is the Conventional one; and KSE-All is the benchmark equity index. Monthly time series data of each index for the period June 2009 to May 2013 (48 data points) is employed. Furthermore, Karachi Inter Bank Offered Rate (KIBOR) with one-month maturity is used as a substitute of risk-free rate. Historical time series data of the three indices and KIBOR have been obtained from KSE's, Bloomberg's, and SBP's websites, respectively.

3.2 Empirical Models

Monthly returns of the hypothetical investment portfolios are calculated by using the following empirical model (Hussein & Omran, 2005):

$$R_{i,t} = \{\log (P_{i,t}) - \log (P_{i,t-1})\} \qquad \text{.. (3.1)}$$

Where, $R_{i,t}$ is the portfolio (i)'s return; $P_{i,t}$ and $P_{i,t-1}$ are index (i)'s prices in periods (t) and (t-1) respectively.

3.2.1 Performance Analysis

3.2.1.1 Average Return Analysis

Average monthly returns of the hypothetical investment portfolios are calculated by using the following empirical model:

$$\bar{R}_i = \frac{1}{n} \sum_{i=1}^{n} R_{i,t} \qquad \text{.. (3.2)}$$

Where, $\bar{R}_i$ is the portfolio (i)'s average return over the study period, and 'n' is the number of observations.

Paired Sample t-test is employed for checking whether there exists any statistically significant difference between the average returns of the Islāmic and conventional investment portfolios under investigation. The null hypothesis for the Paired Sample t-test is that there is no statistically significant difference between the average returns of the two investment portfolios.

3.2.1.2 Risk-Adjusted Return Analysis

Risk-adjusted return of any investment portfolio is its return per unit of all the associated risks. It is considered as misleading to measure the performance of any investment portfolio exclusively on the basis of its average return without any consideration of risks to which investments are exposed. Therefore, the most commonly used risk-adjusted return measures are used in the current study.

3.2.1.2.1 Ratios' Analysis

Ratios calculating 'excess returns per unit of associated risks' are employed in the current study. Both of the following two ratios are modified forms of Sharpe (1966) and Treynor (1965) ratios, which are equally popular among academics and practitioners for performance evaluation of an investment portfolio.

(a) Excess Return per Unit of Total Risk

Excess return per unit of total risk is the ratio measuring the total risk-adjusted[11] performance of an investment portfolio. Higher the said ratio of a given portfolio, superior is its performance.

$$ER_i = \frac{\overline{R_i} - \overline{R_m}}{\sigma_i} \quad \text{.. (3.3)}$$

Where, ER_i is the portfolio (i)'s excess return per unit of total risk; $\overline{R_i}$ and $\overline{R_m}$ are the average returns of the portfolio (i) and the Market portfolio respectively; and σ_i is the standard deviation of portfolio (i)'s returns over the study period.

(b) Excess Return per Unit of Systematic Risk

Excess return per unit of systematic risk is the ratio measuring the systematic risk-adjusted performance of an investment portfolio. Higher the said ratio of a given portfolio, superior is its performance.

$$(ER_i)' = \frac{\overline{R_i} - \overline{R_m}}{\beta_i} \quad \text{... (3.4)}$$

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[11]Systematic as well as unsystematic.

Where, $(ER_i)'$ is the portfolio (i)'s excess return per unit of systematic risk; $\overline{R_i}$ and $\overline{R_m}$ are the average returns of the portfolio (i) and the Market portfolio respectively; and β_i is the portfolio (i)'s Beta (Systematic Risk) over the period, estimated as follows:

$$\beta_i = \frac{COV\ (R_{i,t}\ ,R_{m,t})}{VAR\ (R_{m,t})}$$ .... (3.5)

3.2.1.2.2 Regression Analysis

Jensen (1968) Alpha Index is an absolute measure for a risk-adjusted portfolio's performance. A portfolio's Jensen's Alpha represents its average return in excess of the return predicted by the Capital Asset Pricing Model (CAPM). It is argued that Jensen's Alpha is the standard measure of performance evaluation, which is calculated as follows:

$$(R_{i,t} - RF_t) = \alpha_i + \beta_i\ (R_{m,t} - RF_t) + \varepsilon_{i,t}$$ .... (3.6)

Where, 'α_i' is the portfolio (i)'s Jensen's Alpha; RF_t is the KIBOR rate (a proxy for risk-free rate); and '$\varepsilon_{i,t}$' is an error term with zero mean.

Simple Linear Regression using the OLS method is employed for determining the Jensen's Alpha. The null hypothesis is that Portfolio (i)'s Jensen's Alpha is equal to zero; while, the alternative hypothesis is that Portfolio (i)'s Jensen's Alpha is statistically significantly different from zero. Statistical t-test is employed for determining whether Jensen's Alpha is statistically significantly different from zero or otherwise. A zero or an insignificant alpha indicates that the portfolio generated a return that is equal to its required rate of return and sufficiently compensates for the systematic risk taken. While, a significantly positive value for the Jensen's Alpha implies that the portfolio's returns are in excess of the expected return for a given risk level, whereas, a significantly negative value of Jensen's alpha indicates that the portfolio's returns are less than the expected return for the given level of risk.

3.2.2 Unit Root Analysis

Augmented Dickey-Fuller (1979) test is employed for investigating the unit root and thus non-stationarity in the monthly time series data on the price levels of the two indices under examination. Considering the following first-order autoregressive, AR (1), model:

$$Y_t = \mu + \rho Y_{t-1} + \varepsilon_t$$ ………………………..……… (3.7)

Where 'μ' and 'ρ'[12] are parameters and 'ε_t' is assumed to be white noise. Y_t (representing monthly stock index price levels) is a stationary series, if $-1 < \rho < 1$; similarly, If $\rho = 1$, Y_t is a non-stationary series (a random walk with

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[12] The parameter 'ρ' is the first-order serial correlation coefficient.

drift). Dickey-Fuller test takes the unit root as the null hypothesis, H_o: $\rho = 1$, which is tested against the alternate hypothesis, H_1: $\rho < 1$.

Augmented Dickey-Fuller test is carried out by estimating an equation with Y_{t-1} subtracted from both sides of the equation (6):

$$Y_t - Y_{t-1} = \mu + \rho Y_{t-1} - Y_{t-1} + \varepsilon_t$$

Or $$\Delta Y_t = \mu + (\rho - 1)Y_{t-1} + \varepsilon_t$$

Or $$\Delta Y_t = \mu + \gamma Y_{t-1} + \varepsilon_t \qquad\qquad\qquad\qquad (3.8)$$

Where, ΔY_t is representing changes in the stock index price levels; and $\gamma = \rho - 1$. Whereas, corresponding null and alternative hypotheses are, H_o: $\gamma = 0$ and H_1: $\gamma < 0$.

For the Augmented Dickey-Fuller test, the test statistic is the t-statistic for the lagged dependent variable in the test regression. The null hypothesis of a unit root can be rejected against the alternative, if the t-statistic is less than the MacKinnon (1991) critical values for rejection of the aforesaid null hypothesis; the time series under examination will then be stationary. Alternatively, the time series under investigation will be non-stationary (integrated), if the t-statistic is greater than the MacKinnon critical values.

3.2.3 Co-integration Analysis

If a certain time series is non-stationary at level; while it becomes stationary at the first difference, then such a series is said to be integrated of the order one, i.e., I (1). When two time series are integrated of order one, there is a possibility of a linear combination between these series, which will be stationary at level, i.e., I (0). If such a linear combination exists between the time series, then such series are called co-integrated. For the purpose, Johansen (1991) co-integration test is employed on the monthly time series data on the price levels of the two indices under examination, so that diversification benefits associated with the portfolio constructed with Sharī'ah compliant equities are determined. Considering the following Vector Auto Regression (VAR) of order p:

$$Y_t = A_1 Y_{t-1} + \ldots\ldots + A_p Y_{t-p} + \theta + \varepsilon_t \qquad\qquad\qquad (3.9)$$

Where Y_t is a k-vector of non-stationary I (1) variables; $A_1 \ldots\ldots A_p$ are (n × n) matrices of coefficients to be estimated; 'θ' is a deterministic term; and 'ε_t' is a vector of innovations. The VAR can be rewritten as:

$$\Delta Y_t = \Pi Y_{t-p} + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-i} + \varepsilon_t \qquad\qquad (3.10)$$

$$\Pi = \sum_{i=1}^{p} A_i - I \quad \text{and} \quad \Gamma_i = - \sum_{j=i+1}^{p} A_j \qquad\qquad (3.11)$$

Where 'Π' is the coefficient matrix that is believed to associate changes in price (ΔY_t) to p-periods earlier prices (Y_{t-p}). If the rank 'r' of 'Π' is such that (r < k), then there exist two (k x r) matrices, 'α' and 'β', with 'r' rank each,

such that $\Pi = \alpha\beta'$; moreover, $\beta'Y_t$ is stationary [I (0)]. Here, 'r' represents the number of co-integrating relationships and each column of 'β' is the co-integrating vector. While, the elements of 'α' are known as the adjustment parameters in the vector error correction (VEC) model. Johansen's method is to estimate the 'Π' matrix in an unrestricted form, and then test whether we can reject the restrictions implied by the reduced rank of 'Π'. Johansen has proposed the following two likelihood ratio tests for determining the co-integration rank: the trace test and the maximum eigenvalue test. Significance of the aforesaid statistics is set by the 5% critical values reported by MacKinnon-Haug-Michelis (1999). It is worth mentioning here that both of the lag length and the trend assumption for applying the Johansen procedure are selected on the basis of Akaike Information Criterion (AIC).

4. Empirical Results

4.1 Performance Analysis

This section presents the results of risk-return performance measures of investment portfolios employed in the current study. First of all, descriptive statistics of the monthly returns of Islāmic and conventional portfolios, and their market benchmark over entire study period are reported in the table 4.1.

Table 4.1: Descriptive Statistics of Islāmic & Conventional Portfolios' Returns

N = 47	Mean	Maximum	Minimum	St. Dev.	Skewness	Kurtosis
Islāmic	2.48%	10.28%	-9.74%	4.49%	-0.684	3.151
Conventional	2.18%	11.66%	-11.16%	4.71%	-0.959	4.062
Benchmark	2.16%	10.96%	-11.32%	4.66%	-0.972	4.060

Table 4.1 reveals that average monthly returns of the Islāmic portfolio are greater than both of the conventional and the benchmark portfolios; moreover, average monthly returns of Islāmic portfolio are less dispersed as compared to the other two portfolios, which imply that an Islāmic investment portfolio is less risky than the other two portfolios. To conclude, descriptive statistical analysis suggests that the risk-return performance of a Sharī'ah compliant equity investments' portfolio is better than that of its conventional counterpart. But this is an arbitrary deduction that needs further verifications.

4.1.1 Average Return Analysis

Table 4.2 exhibits average monthly returns of both the Islāmic and the conventional portfolios over the study period, the difference between the average returns, and the corresponding t-statistic values with the

corresponding p-values representing the significance of the aforesaid difference.

Table 4.2: Average Return Analysis of KMI-30 and KSE-100

N = 47	Average Returns	Difference b/w Average Returns	t-statistic* (p-value)
Islāmic	2.48%	0.30%	1.1706 (0.2478)
Conventional	2.18%		

*Paired Sample t-test Statistics.

Table 4.2 reveals that there exists a statistically insignificant difference of 0.30% between the average returns of the two portfolios under investigation. Hence, it is concluded that average returns of Islāmic and conventional portfolios over the study period are the same. This finding of the average return analysis is divergent from the earlier finding of descriptive analysis.

4.1.2 Risk-Adjusted Return Analysis

4.1.2.1 Ratios' Analysis

Table 4.3 reports the Risk-Adjusted Return Ratios of the Islāmic and the conventional portfolios.

Table 4.3: Risk Adjusted Return Ratios of Islāmic and Conventional Portfolios

N = 47	Excess Return per unit of Total Risk	Excess Return per unit of Systematic Risk
Islāmic	0.0715	0.0036
Conventional	0.0027	0.0001
Difference	0.0688	0.0035

Table 4.3 reveals that excess return per unit of total risk and that per unit of systematic risk in case of Islāmic investment portfolio are marginally higher than that of the conventional investment portfolio.

4.1.2.2 Regression Analysis

Table 4.4 reports the Jensen's Alphas of the Islāmic and the conventional portfolios respectively.

Table 4.4: Regression Analysis of Islāmic and Conventional Portfolios

N = 47	Jensen's Alpha (Estimated)	t-statistic (p-value)	Adj R^2

Islāmic	-0.008805	-1.546186 (0.1291)	0.863093
Conventional	0.000488	0.442339 (0.6604)	0.995482

Table 4.4 reveals that Jensen's Alpha for Islāmic portfolio is -0.008805, while, Jensen's Alpha for Conventional portfolios is 0.000488. Since, p-values for t-statistics of both Jensen's Alphas are greater than 0.05 (5%), therefore, the null hypothesis (H_0: $\alpha = 0$) cannot be rejected. Thus, it is found that the two portfolios generated same returns as predicted by the Capital Asset Pricing Model; moreover, returns of both portfolios sufficiently compensated for the systematic risk taken. However, both the portfolios did not either outperform or underperform the market benchmark. Hence, it is confirmed that risk-adjusted returns of Islāmic and conventional portfolios over the study period are same.

4.2 Unit Root Analysis

Table 4.5 reports the Augmented Dickey-Fuller test statistics for the index price levels of the Islāmic (KMI-30) and conventional (KSE-100) indices.

Table 4.5: Augmented Dickey-Fuller Test Statistics

N = 47	ADF-Level			ADF-1st Difference		
	t-Stat.	Prob.*	Test critical values**	t-Stat.	Prob.*	Test critical values**
KMI	-1.246	0.889	-4.166	-6.914	0.000	-4.176
			-3.508			-3.513
			-3.184			-3.187
KSE	-0.696	0.968	-4.166	-6.333	0.000	-4.176
			-3.509			-3.513
			-3.184			-3.187

*MacKinnon (1996) one-sided p-values.
**Test Critical Values are basically MacKinnon (1991) critical values for rejection of null hypothesis, which are calculated at 1% level, 5% level, and 10% level respectively.

Table 4.5 reveals that both the indices' price levels are non-stationary and are integrated of the order one, i.e., I (1).

4.3 Co-integration Analysis

Table 4.6 reports the Johansen co-integration test statistics for the index price levels of the Islāmic (KMI-30) and the conventional (KSE-100) stock indices.

Table 4.6: Johansen Co-integration Test Statistics

2009:06 to 2013:05 (N = 46) Trend assumption: Linear deterministic trend						
No. of CE(s)	Trace Statistic	5% Critical Values	Prob.*	Max-Eigen Statistic	5% Critical Value	Prob.*
None	3.683	15.495	0.927	2.465	14.265	0.976
At most 1	1.218	3.841	0.270	1.218	3.841	0.270

* MacKinnon-Haug-Michelis (1999) p-values.
Trace test indicates no co-integration at the 0.05 level.
Max-eigenvalue test indicates no co-integration at the 0.05 level.

Table 4.6 reveales that p-values for both of the likelihood ratio test statistics, the trace test and the maximum eigenvalue test statistics, for testing the null hypothesis (there are no co-integrating equations) are greater than 5%. Therefore, the null hypothesis cannot be rejected. Thus, it is proved that the price levels of indices KMI-30 and KSE-100 are not co-integrated. In other words, index prices of both indices, KMI-30 and KSE-100, have not been moving together.

5. Conclusion

This empirical study was designed to investigate "how Sharī'ah screening criteria affect the performance of Sharī'ah compliant equity investment portfolios in the context of Pakistan's equity market". The study has also endeavored to find out existence of any statistically significant long-run relationships between the price levels of the Sharī'ah compliant and the conventional equities' indices in order to determine the diversification benefits associated with the Sharī'ah compliant equities.

It has been found that there is no empirical evidence of any statistically significant difference between the risk-return performance of the Sharī'ah compliant equity investment portfolios and their conventional counterparts in Pakistan. Moreover, it is found that price levels of both indices, KMI-30 and KSE-100, are not co-integrated. These findings of the current study are in line with most earlier empirical studies, which concluded that there is no statistically significant difference in the risk-return performance of Sharī'ah compliant investment portfolios and their conventional counterparts (Hussein, 2004, 2007; Girard & Hassan, 2005, 2008; Albaity & Ahmed, 2008; Hassan, Khan, & Ngow, 2010; Binmahfouz & Hassan, 2012; Walkshäusl & Lobe,

2012). Moreover, findings of the current study are in complete agreement with the earlier empirical studies that concluded that price levels of Sharī'ah compliant investment portfolios and their conventional counterparts are not co-integrated (Hakim & Rashidian, 2004; Yusof et al. 2010).

The current study's findings suggest that there is no extra cost associated with the Sharī'ah compliant equities' investment in Pakistan. In other words, Muslim investors are not being penalized for their adherence to the Sharī'ah tenets while constructing their investment portfolios. Thus, Muslim investors in Pakistan are recommended to invest in Sharī'ah compliant equities, which are not only consistent with their religious beliefs, and financial performance wise equally good as the conventional equities, but also are safer investments than their conventional counterparts because Sharī'ah screens filter out highly leveraged companies from the Sharī'ah compliant investment universe, the feature that limits the overall risk.

The current study has also revealed that price levels of Sharī'ah compliant index and its conventional counterpart are not co-integrated. That is, both indices' price levels have not been moving together over the study period. On the basis of said finding, it is recommended that conventional investment portfolios can further be diversified for their better risk to return performance by adding Sharī'ah compliant equities into them.

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